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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,800	06/27/2005	Ronaldus Maria Aarts	NL021457	2100
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EXAMINER				
PAUL, DISLER				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/540,800

**Applicant(s)**

AARTS ET AL.

**Examiner**

DISLER PAUL

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date 6/27/05/9/11/06
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Response to Amendment***

The applicant's amended claims have been considered and are rejected over prior art.

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section

351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1,7-9,12-13,15 are rejected under 35 U.S.C. 102(e) as being anticipated by Volpe (US 6,572,511 B1).

Re claim 1, Volpe disclose of the audio reproduction apparatus comprising: input means for inputting an input audio signal and output for outputting an output audio signal derived from the input audio signal (fig.1-2 wt (6-7); col.2 line 10-15; col.1 line 60-63/input audio and output (speakers to listen to the stereo system)); a cost input for inputting a mathematical cost derived from a measurement, said measurement being user-influenceable (fig.3 (5,11); col.2 line 55-60); and a conditioning unit for delivering the output audio signal in dependence of the mathematical cost, characterized in that the conditioning unit comprises an audio processing for processing means the input audio signal to derive the output audio signal with a reproduction quality in dependence on mathematical cost, wherein a user is able to discern, by the reproduction quality, a deviation of the mathematical cost from a predetermined optimal mathematical cost (fig.4; col.2 line 45-65; col.3 line 1-10).

Re claim 12 has been analyzed and rejected with respect to claim 1 above.

Re claim 7, the audio reproduction apparatus as claimed in claim 1, whereby said audio reproduction apparatus further comprise a first quality calculation unit for determining the reproduction quality for use in the subsequent derivation of the output audio signal by the audio processing means (col.2 line 63-65/command output tracked).

Re claim 8, the audio reproduction apparatus as claimed in claim 1, comprising wherein said audio reproduction apparatus further comprises: quality measuring means for measuring an output quality measure of the output audio signal and comprising parameter value calculation means for calculating a parameter value, for use in the subsequent derivation of the output audio signal by the audio processing means (col.2 line 1-10)

RE claim 9, the audio reproduction apparatus as claimed in claim 1, wherein said audio reproduction apparatus further comprises a mathematical cost calculation unit for deriving the mathematical cost from the measurement receivable from a measurement device (col.2 line 45-55).

Re claim 13, volpe disclose of the method of deriving an output audio signal from an input audio signal in dependence on a mathematical cost derived from a measurement which is user-influenceable, characterized in that the output signal is derived with a specified reproduction quality dependent on the mathematical cost

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and whereby a user is able to discern, by the reproduction quality, a deviation of the mathematical cost from a predetermined optimal mathematical cost (see claim 1 rejection).

Re claim 15, has been analyzed and rejected with respect to claim 14.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volpe (US 6,572,511 B1) and further in view of McGrath (US 6,532,291 B1).

Re claim 2, the audio reproduction apparatus as claimed in claim 1 with the mathematic cost deviate from the predetermined optimal mathematical cost, However, Volpe fail to disclose of the wherein the reproduction quality comprises a three-dimensional position of a virtual sound source, the audio processing means being able to simulate the virtual sound source by means of the output audio signal. However, McGrath et al. disclose of a system with using a headphone wherein the reproduction quality comprises a three-dimensional position of a virtual sound source, the audio processing means being

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able to simulate the virtual sound source by means of the output audio signal, whereby as the mathematical cost deviate from predetermined optimal mathematical cost, the three-dimensional position of the virtual source deviates form a predetermined optimal position(col.2 line 45-60 & col.3 line 1-10; col.4 line 36-46/ as head deviate from positions, then sound deviate as result with input head movement) for the purpose of stabilizing the head at particular locations with headphone movements. Thus, taking the combined teaching of Volpe and McGrath as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Volpe by incorporating the headphone wherein the reproduction quality comprises a three-dimensional position of a virtual sound source, the audio processing means being able to simulate the virtual sound source by means of the output audio signal, whereby as the mathematical cost deviate from predetermined optimal mathematical cost, the three-dimensional position of the virtual source deviates form a predetermined optimal position for the purpose of stabilizing the head at particular locations with headphone movements.

Re claim 3, the audio reproduction apparatus as claimed in claim 2, wherein the audio processing means comprises a filter for simulating the position of the virtual sound source by deriving the output audio signal by filtering the input audio signal with a user

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dependent head related transfer function (col.1 line 45-55; col.3 line 20-40; col.3 line 35-42/head relating to stabilized sound with head mov't).

Re claim 4, the audio reproduction apparatus as claimed in claim 2, wherein the audio processing means comprises an audio processing unit for simulating the position of the virtual sound source, However, the combined teaching of Volpe and McGrath. as a whole, fail to disclose of the changing a property of the output audio signal selected from signal amplitude and added reverberation, However, official notice is taken the concept of changing a property of the output audio signal selected from signal amplitude and added reverberation is well known in the art, thus it would have been obvious for one of the ordinary skill in the art t the time of the invention to have modify the combined teaching of Volpe and McGrath as a whole, changing a property of the output audio signal selected from signal amplitude and added reverberation for localizing sounds image.

3. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Volpe (US 6,572,511 B1) and further in view of Kim (US 6,817,440 B1).

Re claim 5, the audio reproduction apparatus as claimed in claim 1 with the adjustment made dependent on the mathematical cost, However, Volpe fail to disclose of the wherein the audio processing



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means is arranged to derive a second output audio signal, together with the output audio signal constituting a stereo audio signal, the audio processing means being arranged to derive a stereo audio signal from the input audio signal with a specified stereo quality. However, Kim disclose of a headphone device wherein the audio processing means is arranged to derive a second output audio signal, together with the output audio signal constituting a stereo audio signal, the audio processing means being arranged to derive a stereo audio signal from the input audio signal with a specified stereo quality dependent on mathematical cost (col.2 line 17-22; 34-40/stereo output with distinct for each ear base on channels) for the purpose of providing improved virtual sound simulation. Thus, taking the combined teaching of volpe and Kim as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify volpe by incorporating the headphone device wherein the audio processing means is arranged to derive a second output audio signal, together with the output audio signal constituting a stereo audio signal, the audio processing means being arranged to derive a stereo audio signal from the input audio signal with a specified stereo quality dependent on mathematical cost for the purpose of providing improved virtual sound simulation.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Volpe (US 6,572,511 B1) and further in view of Surve et al. (US 6,520,905 B1).

Re claim 11, the audio reproduction apparatus as claimed in claim 9 wherein the mathematical cost calculation unit is arranged to be derived from a sensor measurement (col.2 line 24-27; col.4 line 45-52), However, Volpe fail to disclose of the measurement device being a biometric measurement. However, Surve et al. disclose of a system wherein the measurement device being a biometric measurement (col.6 line 50-67) for the purpose of monitoring the monitoring the physiological state of an individual in contributing to the quality of life of that individual. Thus, taking the combined teaching of McHugh and Surve et al. as a whole, it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Mc Hugh by incorporating the system wherein the measurement device being a biometric measurement for the purpose of monitoring the monitoring the physiological state of an individual in contributing to the quality of life of that individual.

5. Claims 6, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Volpe (US 6,572,511 B1).

Re claim 6, the audio reproduction apparatus as claimed in claim 1 with reproducing/adjusting the sound quality dependent on user's pulse (fig.3)), However, Volpe fail to disclose of the wherein the

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reproduction quality comprises a specification of a distribution of frequencies of the output audio signal, However, official Notice is taken the concept of reproducing sound comprising a specification of distribution of frequency output is commonly known in the art, thus it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify McHugh by incorporating the reproduction quality comprises a specification of a distribution of frequencies of the output audio signal for the purpose of creating virtual sound output.

Re claim 10, the audio reproduction apparatus as claimed in claim 9 wherein the Mathematical cost calculation is arrange to derive the mathematical cost between the measurement and selected value (fig.3) , However, Volpe fail to disclose of the derive the mathematical cost based on a difference between the measurement and a chosen value. However, official notice is taken the limitation of deriving the mathematical cost based on a difference between the measurement and a chosen value is simply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art at the time of the invention to have modify Vope by incorporating the derive the mathematical cost based on a difference between the measurement and a chosen value for the purpose of producing sound dependent on user's input.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mellone et al. disclose of the deriving stereo audio signal from input audio signal with a specified quality dependent on mathematical cost. (US 2—4/0042629 A1), Bittman disclose of the user discernable reproduction quality, with mathematical cost and optimal mathematical cost (US 5,662,117).

### ***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/D. P./

Examiner, Art Unit 2615

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615